DOCUMENT RESUME

ED 437 852 FL 026 128

AUTHOR Johnson, David W.; Johnson, Roger T.
TITLE Cooperative Learning and Assessment.
PUB DATE 1999-00-00
NOTE 16p.; In: Cooperative Learning. JALT Applied Materials; see FL 026 115.
PUB TYPE Opinion Papers (120) -- Reports - Descriptive (141)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Classroom Techniques; *Cooperative Learning; Elementary Secondary Education; English (Second Language); *Evaluation Methods; Second Language Instruction; Second Language Learning; *Student Evaluation; Teaching Methods

ABSTRACT

This paper discusses some major assessment issues (purpose, focus, setting, stakes, and stakeholders of assessment), the procedures used in assessment, and how cooperative learning (CL) may be used in the assessment procedures. Instruction, learning, assessment, and evaluation are all interrelated. Teachers are responsible for instructing students to create learning, which is assessed in order to verify that learning is taking place and to improve the effectiveness of instruction. There are three purposes for assessment--diagnostic, formative, and summative. It takes place in artificial settings (classrooms) and in authentic settings (the real-world). Stakes can be high or low. The stakeholders include students and parents, teachers, administrators, policymakers, colleges, and employers. CL groups present unique and important opportunities and benefits for instruction, assessment, and the reporting of results. For example, homework may be checked in cooperative groups. While this occurs, teachers can be gathering useful observational data about the quality of the explanations and intellectual interchange among group members, which offers them clues as to the current competence of the students and the success of his or her instruction. Other CL assessment techniques include peer editing of compositions, oral presentations, and accumulation of portfolios. CL groups provide the setting, context, and environment in which assessment becomes part of the instructional process and students learn almost as much from assessing their own and their classmates' work as they do from participating in instructional activities. (KFT)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 437 852

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY
Gene Van Troyer
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Chapter 13

Cooperative Learning and Assessment

David W. Johnson
University of Minnesota

Roger T. Johnson
University of Minnesota

In this article we shall briefly discuss some major assessment issues (purpose, focus, setting, stakes, and stakeholders of assessments), the procedures used in assessment, and how cooperative learning may be used in using the assessment procedures.

Assessment Issues

Instruction, learning, assessment, and evaluation are all interrelated. Teachers are responsible for instructing students to create learning, which is assessed in order to (a) verify learning is taking place and (b) improve the effectiveness of instruction. Periodically, assessment is used to judge the quality and quantity of learning and award grades. Instruction, learning, and assessment are so intertwined that it is hard to separate them.

Johnson, D.W. & Johnson, R.T. (1999). Cooperative learning and assessment. In D. Kluge, S. McGuire, D. Johnson, & R. Johnson (Eds.), *JALT applied materials: Cooperative learning* (pp. 164-178). Tokyo: Japan Association for Language Teaching.

ED 0 6 128

The assessment issues educators must deal with include the purposes of assessments, the focus of assessments, the setting in which assessments take place, the stakes involved, and the stakeholders (see Table 1; see also Johnson & Johnson, 1996; Cohen, 1980).

Table 1. *Assessment Issues*

Purpose	Focus	Setting	Stakes	Shareholders
Diagnostic	Process of Learning	Artificial (Classroom)	Low	Students-Parents
Formative	Process of Instruction	Authentic (Real-World)	High	Teachers
Summative	Outcomes of Learning			Administrators
	Outcomes of Instruction			Policy-Makers
				Colleges, Employers

Purposes

The purposes for assessing student performances include:

1. Diagnosing students' present level of knowledge and skills. Diagnostic assessments are conducted at the beginning of an instructional unit, course, semester, or year to determine the present level of knowledge, skill, interest, and attitudes of a student, group, or class (Hughes, 1989; Alderson, Krahnke, & Stansfield, 1987). Such information is useful in setting realistic but challenging learning goals.
2. Monitoring students' progress toward learning goals to help form the instructional program. Formative assessments are conducted periodically throughout the instructional unit, course, semester, or year to monitor progress and provide feedback concerning progress toward learning goals.
3. Provide data to judge the final level of students' learning. Summative assessments are conducted at the end of an instructional unit or semester to provide information about the final quality and quantity of student achievement and/or the success of the instructional program.

Focus

Diagnostic, formative, and summative assessments may focus on the processes of learning and instructional and/or the outcomes of learning and instruction.

BEST COPY AVAILABLE

The student performances often measured by teachers in formal educational situations actually measured are (a) academic learning (what students know, understand, and retain over time); (b) reasoning (the quality of students' reasoning, conceptual frameworks, use of the scientific method and problem-solving, and construction of academic arguments); (c) skills and competencies (oral and written communication skills, teamwork skills, research skills, skills of organizing and analyzing information, technology skills, skills of coping with stress and adversity, conflict resolution skills); (d) attitudes (a love of learning, commitment to being a responsible citizen, desire to read, liking scientific reasoning, self-respect, liking of diversity, commitment to making the world a better place); and (e) work habits (completing work on time, using time wisely, meeting responsibilities, striving for quality work, continuously improving one's work, striving to add value to each job one does).

The setting in which the assessments may take place include the classroom or more authentic settings. Authentic assessments require students to demonstrate desired skills or procedures in "real life" contexts. Low-stake assessments tend to be diagnostic and formative assessments. High-stake assessments tend to be summative assessments that partially determine students' futures, such as college admission tests. Finally, the stakeholders in assessment include the students and their parents, teachers, administrators, and policymakers.

Assessment Procedures

Traditionally, assessment procedures have been quite limited. What has been lacking in traditional assessment is a systematic way of collecting and reporting such evidence.

Times have changed. The diverse assessment procedures noted below are well developed and may be used effectively as part of any instructional program. Each has its strengths and weaknesses. Each can be integrated into ongoing instructional programs and managed when they are used as part of cooperative learning.

In conducting assessments there are a variety of procedures that may be used (see Johnson & Johnson, 1996; Hughes, 1989). One procedure is student conferences. Goal-setting conferences establish learning goals and learning contracts, progress-assessment conferences review the student's progress in achieving his or her goals, and postevaluation conferences explain the student's accomplishments to interested stakeholders. One of the most interesting procedures for post-evaluation conferences is student-led conferences with parents. Other assessment procedures include standardized and teacher-constructed tests, compositions and presentations, individual and group projects, portfolios, observing student performances, interviewing students, attitude questionnaires,

BEST COPY AVAILABLE

simulations, student management teams, and record keeping (attendance, homework, participation, and extra-credit) (Johnson & Johnson, 1996).

Most of these assessment procedures can only be used long term in the context of cooperative learning. The problems in using the above assessment procedures include the amount of labor involved, the different modalities utilized, the diverse outcomes focused on, the potential for bias inherent in the use of more subjective assessment procedures, and the lack of student understanding of the criteria and rubrics being used to assess their work. The use of cooperative learning groups in the assessment process generally solves these problems.

Examples of Using Cooperative Learning in Assessments

Cooperative learning groups present unique and important opportunities and benefits for instruction, assessment, and the reporting of results. In understanding these opportunities and benefits, it may be helpful to address a number of ways in which cooperative learning may be used in assessment and reporting practices (see Johnson & Johnson [1996] for a more complete coverage of procedures).

Checking Homework in Cooperative Groups

In order to assess the quality of students' homework daily, a procedure can be implemented to check homework quickly at the beginning of each class period (Johnson & Johnson, 1996; Johnson, Johnson, & Holubec, 1993). Students are requested to bring their completed homework to class and demonstrate that they understand how to do it correctly.

The cooperative procedure is as follows. Students enter the classroom and meet in their cooperative learning groups. The groups should be heterogeneous in terms of ability. One member (the runner) goes to the teacher's desk, picks up the group's folder, and hands out materials in the folder to the appropriate members. Members compare answers and quiz each other on the homework assignment. The cooperative goal is to ensure that all group members bring their completed homework to class and understand how to do it correctly. Two roles are assigned: explainer (explains step-by-step how to complete the homework correctly) and accuracy checker (verifies that the explanation is accurate, encourages, and provides coaching if needed). The explainer reads the first part of the assignment and explains step-by-step how to complete it correctly. The other group members check for accuracy. The roles are rotated clockwise around the group so that each member does an equal amount of explaining. The group should concentrate on the parts of the assignments that members did not understand. Any questions members have about completing the assignment correctly are answered. The runner records how much of the assignment each member completed. At the end of the assigned review time,

the members' homework is placed in the group's folder and the runner returns it to the teacher's desk.

There is an alternative to this procedure. Students are assigned to cooperative learning pairs. The teacher randomly picks questions from the homework assignment. One student explains the correct answer step-by-step. The other student listens, checks for accuracy, and prompts the explainer if he or she does not know the answer. Roles are switched for each question. These procedures can be used for both formative and summative assessment.

Observational Procedures

While the students work together in cooperative learning groups, teachers systematically gather observation data about the quality of the explanations and intellectual interchange occurring among group members (Johnson & Johnson, 1996; Johnson, Johnson, & Holubec, 1993). Observation data may be gathered by the use of formal observation schedules (on which the frequency of behaviors are tallied), checklists, rating scales, or anecdotal impressions. These data are available for formative evaluation and for indices of such outcomes as effort and higher level reasoning.

Observational procedures are aimed at describing and recording behavior as it occurs. From observing students' behaviors, teachers gain the information needed to make judgments about the current competence of the students and the success of the instructional program. To observe students engaging in such outcomes of instruction as (a) reasoning, (b) problem solving, and (c) metacognitive thinking, students must be observed "thinking out loud" in cooperative learning groups. In essence, cooperative learning groups are "windows into students' minds." Teachers assign students to small cooperative groups and give them an assignment. As the groups work, the teacher moves from group to group listening to the students interact with each other. From listening to students explain how to complete the assignment, the teacher can assess what students understand and what they do not understand, the level of cognitive reasoning they are using, and the strategies they are using to approach the assignment. In addition, the teacher can assess how frequently metacognitive strategies are being used. A variety of observation sheets are given in Johnson, Johnson, and Holubec (1993).

Many times students may be able to give the "correct" answer to a question without understanding the principles and theories on which the answer is based. Correct answers on a test and completed homework assignments tell teachers very little about students' reasoning processes and understanding.. The only way teachers can be sure that students really understand the subject being studied is by listening to students explain what they know to each other step by step. To do so for each class member, the students must be working in coopera-

tive (not competitive or individualistic) learning groups. These procedures are best used for formative evaluation purposes.

Student involvement in evaluation may be facilitated by teaching students how to observe and gather useful data on the interaction among group members. One observer may be appointed. Cooperative learning groups offer a unique opportunity for immediate diagnosis of level of understanding, feedback from peers, and remediation to correct misunderstandings and fill in gaps in students' understanding. Training students to observe each other's cognitive reasoning and strategies for solving problems and completing assignments will facilitate the cycle of immediate diagnosis-feedback-remediation.

Assessing the Quality of Social Skills

In addition to evaluating efforts to achieve academically, teachers need to assess and evaluate students' efforts to work together cooperatively. The procedure for assessing students use of social skills is as follows (Johnson & Johnson, 1996; Johnson, Johnson, & Holubec, 1993):

1. The teacher must decide which social skill is going to be emphasized and make practicing it one of the objectives of the instructional unit. Every cooperative instructional unit is a social skills lesson as well as an academic one.
2. The teacher operationally define the social skill. It is often helpful to have the class generate the list of nonverbal actions and verbal phrases that demonstrate the skill.
3. The teacher teaches the social skill to the students, for example, how to encourage group members. The skill may be modeled, explained step by step, and practiced by the students before the instructional unit begins. Students are informed that use of the social skill during the instructional unit is expected.
4. The teacher prepares the observation form, appoints observers, and explains the observation form to observers. There are three possible observers: the teacher, students, and visitors.
5. The observers use the observation form to monitor the interactions among group members while they work on the academic lesson, paying special attention to the targeted social skill. The observations provide objective data about the interaction among group members. The behavior of group members is observed so that students may be given feedback about their participation in the group and so that inferences can be made about the ways in which the group is functioning.
6. Each group member may fill out a checklist or questionnaire about their actions in the group in order to assess how often and how well they individually performed the targeted social skill and other small group skills.

7. The observer reports to the group the information gathered and group members report their impressions as to how they behaved. The observer summarizes his or her observations in a clear and useful manner and describes them to the group as feedback. The observer then helps group members make inferences from the observations about how well the group functioned, how frequently and well each member engaged in the targeted skill, and how the interaction among group members should be modified to make it more effective. The observer ensures that all group members receive positive feedback about their actions in the group.
8. The group members reflect on and analyze the effectiveness of their use of social skills. Reflection is needed in order to discover what helped and hindered them in completing the academic assignment and whether specific actions had a positive or negative effect. After small group processing, there is whole class processing in which the teacher shares his or her feedback to the class as a whole.
9. The group members set goals for improving their competence in engaging in the social skills during the next group meeting. Members discuss the goals and publicly commit to achieving them.

Interview Procedures

In addition to observing students' work, teachers will wish to interview students systematically to determine the level of learning, cognitive reasoning, problem solving, and metacognitive thinking (Johnson & Johnson, 1996). Interviews may take place in the following procedure. The teacher assigns students to cooperative learning groups that are heterogeneous in terms of ability. The groups are given a set of questions in the first class of the unit and instructed to prepare all group members to respond to the questions. Each class period the groups are given time to practice their responses to the questions. In the fourth and fifth class periods the teacher randomly chooses students from each group and gives each one an oral examination.

In conducting the interview, the teacher joins a group and randomly selects one member to explain the answer to a randomly selected question. The teacher poses a series of questions, listens to student answers, and probes for more information. The teacher tries to activate the student's background knowledge and promote more complex language and expression. When that member finishes responding to the question, other group members can add to the answer. The teacher judges the answer to be "adequate" or "inadequate." The teacher then asks another member a different question. This procedure is repeated until all questions have been answered or until the teacher judges the group to be inadequately prepared. In this case the group has to return to the assignments and practice until they are better prepared. The teacher provides guidance by identifying particular weak-

nesses and strengths in the member's answers. All group members are given equal credit for successfully completing the interview.

Paper-and-Pencil Achievement Tests

Tests may be given both to assess and increase student learning. There are two advantages of cooperative learning groups in administrating traditional tests (Johnson & Johnson, 1996; Johnson, Johnson, & Holubec, 1993; Johnson, Johnson, & Smith, 1991). First, allowing students to work together before an assessment can level the playing field by enabling students to compare understandings and ensure that they all have the same background knowledge to prepare for the assessment. Second, allowing students to work in groups immediately following the assessment (a) allows each group member to discover what he or she did and did not understand, (b) allows each group member to discover where the information required to answer the questions is in the course materials, and (c) allows the group to provide remediation to members who did not understand the course content covered in the test.

The sequence of using cooperative learning groups in testing is (a) students work together in cooperative learning groups to review the material to be covered in the test, (b) each student takes the test individually, and (c) students retake the test in the cooperative learning group (Group Review, Individual Test, Group Test) (Johnson, Johnson, & Holubec, 1993). Students are assigned to cooperative learning groups that are heterogeneous in terms of ability. The groups study together during the unit. In the fourth class meeting the groups meet to ensure that all group members know and understand the material on which they will be tested.

An examination is given in the fifth class meeting. The students take the test individually, making two copies of their answers. They hand in one answer sheet to the teacher (who then scores the answers). If all members of the group score above a present criterion (such as 90 percent correct) on the individual tests, then each member receives a designated number (such as five) of bonus points. The bonus points are added to their individual score to determine their individual grade for the test. The students keep the second answer sheet. After all members have finished the test, the group meets to take the test again. Their task is to answer each question correctly. The cooperative goal is for all group members to understand the material covered by the test. For any answer that they disagree about or are unsure of, they are required to find the page and paragraph in the text that contains the answer. The teacher randomly observes the groups to check that they are following the procedure.

Peer Editing Of Compositions

Students are assigned to cooperative groups and are assigned the task of writing a composition or report (Johnson & Johnson, 1996; Johnson, Johnson, &

Holubec, 1993). Each student writes his or her own composition. The assignment is structured cooperatively by informing students that all group members must sign a statement verifying that each member's composition meets the criteria set by the teacher. Each group member will receive two scores for the composition. The first is based on the quality of his or her composition. The second is based on the total number of errors made by the group (the number of errors in their composition plus the number of errors in their groupmates' compositions).

A typical procedure follows. First, the teacher assigns students to cooperative learning pairs with at least one good reader in each pair. The task of writing individual compositions is given. Students are informed that the criterion for success is a well-written composition by each student. Depending on the instructional objectives, the compositions may be evaluated for grammar, punctuation, organization, content, or other criteria set by the teacher.

Second, Student A describes to Student B what he or she is planning to write. Student B listens carefully, probes with a set of questions, and outlines Student A's composition. The written outline is given to Student A. This procedure is then reversed with Student B describing what he or she is going to write and Student A listening and completing an outline of Student B's composition, which is then given to Student B.

Third, each student researches the material he or she needs to write the compositions, keeping an eye out for material useful to his or her partner. If one student does not have the skills required to use reference materials and the library effectively, the partner teaches him or her how to do so.

Fourth, the two students work together to write the first paragraph of each composition to ensure that they both have a clear start on their compositions. Each student then writes his or her composition individualistically. When completed, the students proofread each other's compositions, making corrections in capitalization, punctuation, spelling, language usage, topic sentence usage, and other aspects of writing specified by the teacher. Suggestions for revision are explained. Each student then revises his or her composition, making the suggested revisions. The two students then reread each other's compositions and sign their names (indicating that they personally guarantee that no errors exist in the composition).

While the students work, the teacher monitors the pairs, intervening where appropriate to help students master the needed writing and cooperative skills. When the composition is completed, the students discuss how effectively they worked together (listing the specific actions they engaged in to help each other), plan what behaviors they are going to emphasize in the next writing pair, and thank each other for the help and assistance received.

Oral Presentations

When students are required to give class presentations, the task is to prepare and conduct a presentation on an assigned topic (Johnson & Johnson, 1996; Johnson, Johnson, & Smith, 1991). The cooperative goal is for all members to learn the material being presented and gain experience in making presentations. First, the teacher assigns students to groups of four, gives each group a topic, and requires them to prepare one presentation that each group member can give in its entirety. The presentation should be given within a certain time frame and should be supported with visuals and/or active participation by the audience. Second, the groups are given time to prepare and rehearse. All group members should be able to give the presentation. Third, the class is divided into four sections (one in each corner of the classroom). One member of each group goes to each section. Each student makes a presentation to his or her section. The audience rates the performance on a reaction form provided by the teacher. A presentation is evaluated on the basis of the degree to which it was (a) scholarly and informative, (b) interesting, concise, and easy to follow, (c) involving (audience active, not passive), (d) intriguing (audience interest in finding out more on their own), and (e) organized (has introduction, body, conclusion). In addition, the teacher adds criteria uniquely aimed at the purposes of the presentation. At the end of the presentation, one copy of the rating form is given to the teacher and one copy is given to the presenter. The teacher systematically observes part of all presentations. Fourth, the groups meet to evaluate how effectively each member made the presentation. Remedial help is given to any member who had problems presenting.

Remember, any performance given by a student, whether it is a speech, a musical performance, a science demonstration, a dramatic presentation, or a videotape project, can be assessed and evaluated by peers as well as a teacher.

Portfolios

Portfolios are used to accumulate student work over time to show how students are progressing (Johnson & Johnson, 1996). The portfolio allows the student to present his or her work as a whole. The portfolio then allows teachers and other interested audiences to consider multiple sources of data when they examine what students know and can do. A much broader concept of learner's strengths and needs can be formulated. Both the teacher and the student need to be satisfied that the portfolio offers a true representation of the student's understanding and abilities.

While the portfolio reflects what the student is capable of given the editing and feedback from classmates, parents, and teachers, it does not reflect how well the student can write on demand. The teacher, therefore, may wish to give a test in which students are given a certain amount of class time (such as 30

minutes) to write an essay. The extent to which the writing skills learned in constructing the portfolio transfer to new writing demands can then be assessed. Portfolios should show mastery of basic skills and procedures that can be used and applied in new situations.

The cooperative procedure for using portfolios is similar to that used for peer editing of compositions (Johnson & Johnson, 1996). The task is for each student to create a portfolio. The criteria for success is a well-constructed portfolio by each student. The cooperative goal is for all group members to verify that each member's portfolio is perfect according to the criteria set by the teacher. Students receive an individual score or evaluation on the quality of their portfolio. The teacher can also give a group score based on the total number of errors in their portfolios made by the group. Each student is individually accountable to create his or her own portfolio. The procedure is as follows (Johnson & Johnson, 1996; Johnson, Johnson, & Smith, 1991):

1. The teacher assigns students to groups with at least one good reader and writer to each group.
2. Each item that may potentially be included in the portfolio is created in the context of the cooperative learning groups. Compositions, for example, go through a peer editing process to ensure that they meet the criteria set by the teacher. This peer editing process is key, as while the portfolio is an expression of the quality of work of each student, assessing and giving feedback to groupmates about their portfolios provides skills and experiences that go beyond the feedback received from others.
3. Each member chooses representative items they think should be in their portfolio.
4. Each member explains his or her portfolio to the other members.
5. The group members provide each student with feedback concerning the quality of their presentation and the wisdom of the choice of the items.
6. If possible, a chart or graph is drawn showing the progress the student has made.
7. A test is given in which students individually create a product similar to those in the portfolio to demonstrate mastery of the skills and competencies reflected in the portfolio.

Academic Controversy and Critical Thinking

Higher level reasoning, critical thinking, and the ability to advocate a point of view persuasively are best taught and assessed by two interrelated instructional procedures: cooperative learning and academic controversy. Cooperative learning has been defined in a previous article (see Kluge, and Johnson & Johnson,

this volume). Controversy exists when one student's ideas, information, conclusions, theories, and opinions are incompatible with those of another, and the two seek to reach an agreement (Johnson & Johnson, 1995). In well-structured controversies, a cooperative group is divided into two pairs. The pairs are assigned opposing positions. The pairs thoroughly research their position and develop a persuasive case for its validity, present the best case possible to the other pair and listen to the opposing position, engage in a discussion in which they attempt to refute the other side and rebut the other's attacks on their position, reverse perspectives and present the best case for the opposing position, and then drop all advocacy and seek a synthesis that takes both perspectives and positions into account. Compared with concurrence-seeking, debate, and individualistic efforts, controversy results in greater mastery and retention of the subject matter, higher quality problem solving, greater creativity in thinking, greater motivation to learn more about the topic, more productive exchange of expertise among group members, greater task involvement, more positive relationships among group members, more accurate perspective taking, and higher self-esteem (Johnson & Johnson, 1995). An example of such an assessment is the Connecticut Academic Performance Test (1994) which assesses the competencies of researching a position, preparing a persuasive argument, and presenting it.

Self and Other Rating of Work Habits

Having students rate themselves and their groupmates is an important addition to most instructional units (Johnson & Johnson, 1996; Johnson, Johnson, & Holubec, 1993). First, students rate the quality and quantity of their learning. Second, students rate the quality and quantity of the learning of each of their groupmates. Third, students discuss and reflect on their learning experiences (under the guidance of an observant teacher), comparing their self-ratings with the ratings they receive from groupmates. Such self and other ratings allow students to see how the quality of their work has evolved.

There are a number of factors that teachers need to assess besides test scores. Students need to arrive at class on time and be prepared to learn (have the essential materials, resources, and attitudes). Students need to provide academic help and assistance to groupmates and ask groupmates for help when they need it. In using a rating form students need to understand clearly the purpose of the form and how it will be used, the number of points (if any) the form will count in evaluating students, and the questions on the form.

Group Products

The usual rule for cooperative learning groups is that students learn in a group and are subsequently assessed as individuals (Johnson & Johnson, 1996; Johnson,

Johnson, & Smith, 1991). While in school individual assessment is more common than group assessment, in real life it may be just the opposite. In most organizations, the success of the organization as a whole, divisions in the organization, and teams in the division are focused on more frequently than is the success of each individual employee. Authentic assessment, therefore, most often means group assessment. Thus, there are times when a classroom assignment may be given requiring a group report, exhibit, performance, video, or presentation.

The cooperative goal is for group members to complete one project in which everyone has contributed a share of the work, everyone can explain its content and how it was conducted, and everyone can present to the class. The procedure is as follows. First, students are assigned an initial project and are placed in cooperative learning groups to complete it. The required materials are provided. Second, the group completes the project, ensuring that all members contributed and agree on and can explain the results. The teacher systematically observes each group and provides feedback and coaching. Third, the group hands in their report to the teacher, each member presents the results to a section of the class, and a test may be given on the content of the project. Fourth, the assignment can be extended by the teacher presenting the relevant algorithm, procedure, concept, or theory required to complete the project. Students are then given a more complex project that requires them to apply what they have just learned.

Group Processing

One audience for assessment results is the cooperative group itself. The results of assessments have to be communicated to the student and to his or her groupmates. The group members reflect on (i.e., process) the achievement level of each student and how well they are helping and assisting each other to learn (Johnson & Johnson, 1996; Johnson, Johnson, & Holubec, 1993). Group processing ends with a group celebration of members' success and progress.

Total Quality Learning

In communicating to the cooperative groups the results of assessments of each student's academic progress and progress in working effectively as part of a team, the stage is set for the continuous improvement process. Total quality learning is the use of cooperative learning groups to continuously improve students' performances and group effectiveness (Johnson & Johnson, 1994). Traditionally, it is the outcomes of instruction that have been the focus of assessment. W. Edwards Deming and other advocates of total quality management in business and industry, however, stress that instead of measuring outcomes (inspecting quality in), the emphasis should be on improving the process

by which instructional and learning take place. The continuous improvement of instruction and learning consists of seven steps (Johnson & Johnson, 1994):

1. Form teams. In order to promote total quality in a school, both students (cooperative learning groups) and teachers (colleagial teaching teams) have to be assigned to teams. The teams are placed in charge of the quality of the work of its members. Team members, therefore, have to be trained to organize their work, assess its quality daily, and place the results on a quality chart to help them evaluate their effectiveness.
2. Select a process for improvement. The team needs a specific, definable process to work on. The process needs to be significant and it must be in the power of the team to change the process.
3. Define the process. The best way to define the process is to draw a picture of it. Two common ways to picture a process are the flow chart and the cause-and-effect diagram.
4. Engage in the process. Team members must engage in the process so they can measure each of its steps.
5. Gather information about the process, display the data, and analyze it. There are three parts to this step.
   a. The team identifies quantifiable factors (such as time). If a factor cannot be counted, it cannot be improved (conversely, to be able to improve it, you must be able to count it).
   b. The team develops a design for gathering the relevant data. This includes specifying what data will be collected, who will collect it, when it will be collected, and how it will be collected. A check sheet or observation form is a common way to gather data.
   c. The team analyzes and portrays the data in ways that help members understand it easily. Common ways to portray data are the Pareto chart, run chart, scatter diagram, and histogram.
6. Creating and implementing an improvement plan. A plan is created on how the process is to be modified to improve its effectiveness. The team then implements the plan. The focus is on making small, incremental improvements in a process day after day after day. The team carefully evaluates the implementation (members gather more data). If the modified process works, the team adopts it. If it does not work, the team redesigns it and tries it out again on a small basis.
7. Institutionalizing changes that work. Team members ensure that there is no backsliding (reverting to the old practices) by taking new data samples constantly, analyzing them, revising the plan, and revising the process.

Conclusion

The assessment issues that need to be considered in every classroom include the purpose of the assessment, the focus of assessments, the setting in which assessments take place, the stakes involved, and the stakeholders. The procedures that may be used to assess student learning and instructional effectiveness include student conferences, standardized and teacher-constructed tests, compositions and presentations, individual and group projects, portfolios, observation of student performances, interviews of students, attitude questionnaires, simulations, student management teams, and record keeping (attendance, homework, participation, and extra-credit). Most of these procedures can only be used if cooperative learning is also used. Cooperative learning groups provide the setting, context, and environment in which assessment becomes part of the instructional process and students learn almost as much from assessing the quality of their own and their classmates' work as they do from participating in the instructional activities.

References

Alderson, J., Krahnke, K., & Stansfield, C. (Eds.). (1987). *Reviews of English language proficiency tests*. Washington, DC: TESOL.

Cohen, A. (1980). *Testing language ability in the classroom*. Rowley, MA: Newbury House Publishers.

Connecticut State Board of Education. (1994). *Connecticut academic performance test*. Hartford, CT: Author.

Hughes, A. (1989). *Testing for language teachers*. Cambridge: Cambridge University Press.

Johnson, D. W., & Johnson, R. (1995). *Creative controversy: Intellectual challenge in the classroom* (3rd ed.). Edina, MN: Interaction Book Company.

Johnson, D. W., & Johnson, R. (1994). *Leading the cooperative school* (2nd ed.). Edina, MN: Interaction Book Company.

Johnson, D. W., & Johnson, R. (1996). *Meaningful and manageable assessment through cooperative learning*. Edina, MN: Interaction Book Company.

Johnson, D. W., Johnson, R., & Holubec, E. (1993). *Cooperation in the classroom* (6th ed.). Edina, MN: Interaction Book Company.